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ABSTRACT

Reports on a project designed (1) to explore the utility of the University of Hawaii Preschool Language Curriculum in a broad field-testing situation with teachers of varying skill and background; (2) to determine whether or not there is loss of effectiveness when the amount of supervision and consultation has been reduced from that provided in locally administered projects; and (3) to measure the effectiveness of the curriculum with groups using several nonstandard dialects other than Hawaiian pidgin. The curriculum was taught in 16 classes of Appalachian, Hawaiian, Indian, Mexican-American, northern urban, southern Negro, and Puerto Rican children. Children were given the PPVT and the ITPA initially and again after a 6-month interval. The change from pretest to posttest on each measure was computed for each class. The experimental teacher was ranked in terms of the total net gain and was also ranked independently by the project staff in terms of effectiveness in using the language curriculum. Both the rank order and tetrachoric correlation coefficients between these two variables were significantly different from zero beyond the .01 level of confidence. Appendixes comprise more than half the document. (Author/AJ)

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Center for Research in Early Childhood Education
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Final Report
Field Test of the University of Hawaii Preschool Language Curriculum

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PS 004447

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TABLE OF CONTENTS

List of Tables i

Foreword ii

Background 1

Objectives 4

Sample for the Field-Testing 4

Experimental Treatment 5

Teacher Training 7

Evaluation 8

Results and Discussion 9

Appendix A--Outline of UHPLC Manual 17

Appendix B--Reinforcement Procedure 24

Appendix C--Language Lesson Plan 27

Appendix D--Teacher Training Syllabus 34

Appendix E--Language Lesson Evaluation 36

Appendix F--Test of Expressive Language Answer Sheet 38

Appendix G--Analysis of Covariance Tables 41

References 48

LIST OF TABLES

Table 1--Educational Level and Ranking on Effectiveness in Using Language Curriculum for 17 Experimental Teachers 10

Table 2--Net Gains from Pre-test to Post-test Standard Scores on ITPA Subtests, Number of Categories Used on Verbal Expression Subtest, and PPVT I. Q. Scores for Experimental Classes Listed in Order of the Teachers' Judged Effectiveness in Using Language Curriculum 11

Table 3--Adjusted Means and F Ratios for ITPA Subtests and PPVT for the Experimental (Exp.) and Comparison (Com.) Groups of Seven Subsamples and Total Sample 13

Table 4--TEL Means, t-Tests, and p's for Three Subsamples 15

Table 5--TEL Pre-test and Post-test Means and Correlated t-Test for Puerto Rican Subsample 16

FOREWORD

This project was conducted with the cooperation of Head Start teachers, staff, and children in various parts of the United States. The assistance of the directors of evaluation and research centers currently or formerly supported by the Office of Economic Opportunity in locating suitable subsamples is gratefully acknowledged. These included Dr. Herbert Zimiles of the Bank Street Early Childhood Research Center, Dr. Carolyn Stern of the University of California at Los Angeles Head Start Research Center, Dr. Edward Johnson of the Southern University Evaluation and Research Center for Head Start and Dr. Theron Alexander of the Temple University Child Development Research and Evaluation Center for Head Start. Special appreciation is also expressed for the effective assistance of Ruth Waugh, director of the DeBusk Memorial Center at the University of Oregon.

Several of the staff members of the University of Hawaii Center for Research in Early Childhood Education, Phyllis Loveless, Karen Kelly, Gayle Geiger, and Myra Kent, have served in multiple roles: as teachers of the language curriculum used in this project, as developers of the curriculum, as trainers and observers of other teachers. Christina Anderson has worked on various aspects of the project. Virginia Lerner has assisted in the statistical work.

Background

For several years work has been in progress at the University of Hawaii on development of a curriculum for use with children from low-income families in Hawaii who have been exposed principally to a non-standard dialect of English. The assumption that exposure to a restricted code adversely affects the educational future of environmentally deprived children has been widely supported (Hess, 1964; Bernstein, 1961; Spiker, Hodges & McCandless, 1966; Crowell, 1966; Crowell & Fargo, 1967; Miller, 1969; Barbrack, 1970).

A language curriculum has been prepared and used successfully with young children from low-income families in Hawaii who are almost entirely monolingual speakers of the non-standard dialect of English known as pidgin. This curriculum is a carefully programmed, detailed presentation of syntactic patterns which appear with high frequency in the standard dialects of American English. It includes extensive use of dialogue techniques and question-and-answer sequences designed to increase the functional use of language.

The curriculum has been used in 18 Head Start classes in Hawaii, both by regular classroom teachers and by highly skilled language teachers from the project staff, who went into Head Start classrooms and taught the program daily as supplementary teachers. When the curriculum was used by regular classroom teachers, the children in the experimental group gained in vocabulary, increased complexity of syntax, and fluency. They also showed evidence of being able to monitor their own grammatical constructions and to question more frequently.

In this project, eight classes had the experimental language curriculum and eight other classes were tested for comparison purposes. Four of the language classes and four of the comparison classes also had a parent education program. This program attempted to translate the content presented in the classroom to the parents and provide them with activities to use at home with their children that would strengthen the language concepts taught in school. For two groups who had had the language curriculum, those whose parents had participated in the parent education program attained higher mean scores on vocabulary measures than those whose parents had not participated. The differences were not statistically significant, however. Significantly higher mean scores were obtained by children of participating parents on the School Readiness Tasks, and the mean scores of all children who had the language curriculum were higher than the mean scores of all children who did not have language at beyond the .01 level of significance.

On the Vocal Encoding Subtest of the Illinois Test of Psycholinguistic Abilities (ITPA), the number of words produced by each child was tabulated. On the post-test the children in the experimental language classes produced a mean of 42.6 words, while those from the comparison classes produced a mean of 25.7 words. A correlated t-test evaluating net change between pre-test and post-test word counts for the experimental and control groups was applied. The difference in the net change between the two groups clearly was statistically significant in favor of the experimental group ($p < .01$).

The children in the experimental classes used more sentences or longer phrases in responding to the objects presented in the Vocal Encoding Subtest than those in the comparison classes. Since pattern practice of

complete sentences was emphasized and children were encouraged to respond by using more elaborate phrases in the language program, the mean word length of the utterances each child gave in response to this subtest was computed. No difference was apparent between the two groups on the pre-test. The typical response in both groups was a one- or two-word utterance consisting of an article plus a noun. The same type of analysis to evaluate net change was applied to this measure as to total number of words, and again the net change was statistically significant in favor of the experimental group ($p < .001$).

When the curriculum was taught by special, supplementary language teachers, the results were especially striking. This procedure of supplying supplementary language teachers was used in 1968-69 in six classes on Oahu and again in 1969-70 in four more classes. In the 1968-69 classes, three teachers worked very closely in preparing lessons in an effort to keep both the content and techniques as comparable as possible. In order to control for the effects of the reinforcement schedule and the attention of an interested adult who was part of the daily program, two additional comparison classes were taught traditional nursery school activities by an "enrichment" teacher who followed the same procedure that the language teachers used in rewarding performance. The mean scores of the experimental classes were significantly higher than those of the comparison classes (all at less than the .01 level of significance) on individual measures of general ability such as the Stanford-Binet and the Preschool Inventory; psycholinguistic abilities, i.e., the total score on the Illinois Test of Psycholinguistic Abilities, the Verbal Expression and Auditory Association subtests and the number of of scoring categories used in the Verbal Expression (Adkins and Herman, 1970).

Objectives

With increasingly satisfactory results in using the curriculum with Hawaiian children in closely monitored classrooms, the question of wider applicability led to the proposal to field test the language curriculum.

Three major questions were posed: (1) Can the language curriculum be used in a broad field-testing situation with a large number of teachers of varying skill and background and still be effective? (2) Will the effectiveness be diminished by a substantial reduction in the amount of detailed supervision of teachers that had characterized the projects conducted at the local level? (3) Is the curriculum equally effective with groups of children who represent different cultural groups and who speak different non-standard dialects of English? In order to explore these questions, a number of specific culture/dialect samples were recruited and training procedures for teachers were defined and prepared to insure consistency across samples.

Sample for the Field-Testing

With the cooperation of several of the former Head Start Evaluation and Research centers, sample classes for each of seven different culture/dialect groups were selected.

The staff of the Temple University Child Development Research and Evaluation Center recommended the Upper East Tennessee Economic Opportunities Authority, which in turn identified the Appalachian subsample. The program for the Hawaiian subsample on the island of Maui was administered by the University of Hawaii Center staff. A colleague from the University of Oregon who previously had coordinated the collection of evaluation data for the University of Hawaii Evaluation and Research Center identified

the Indian and the Northern Urban subsamples and supervised the data collection for both of these groups. The Mexican-American classes were located by the director of the Center at the University of California in Los Angeles, who also assisted in finding qualified persons to collect data for the project. The Southern Negro subsample and the coordinator were located by the director of the Southern University Evaluation and Research Center for Head Start. Access to the Puerto Rican subsample in the fall of 1969 was made possible by the staff of the Bank Street Early Childhood Research Center.

In all, 16 Head Start classes of children representing the several dialects of English were taught the University of Hawaii Preschool Language curriculum. For each of these samples, two other classes were selected from the same population to serve as comparison groups. All dialect groups except the Puerto Rican subsample began the program in 1968. A number of children among the Puerto Rican and the Mexican-American groups began the program speaking only Spanish, while the Northern Urban group, although they qualified for a federally subsidized educational program in their community, were essentially speakers of standard English.

PS 004447

Experimental Treatment

The experimental treatment used in 1968-69 was defined by the University of Hawaii Preschool Language Curriculum (UHPLC) manual, second edition. This is a full-year program, which is an attempt to provide young children with the most useful of standard English grammatical constructions, giving them the underlying logic of the language, and enabling them to use it as a vehicle for conceptualization. An earlier edition that had been used in a feasibility study on Oahu was initially influenced by the Bereiter-Engelmann Beginning Language Program

(Bereiter & Engelmann, 1966). It was, however, extensively revised into a highly detailed, carefully sequenced instructional manual which is outlined in Appendix A. It presented the syntactical forms to be taught, techniques for presentation, and a schedule of reinforcement procedures (Appendix B) in a series of structured lessons (Appendix C). It was accompanied by a packet of informal supporting activities.

Frequency of usage was the basis for selecting the vocabulary to be included in the curriculum. The most frequently occurring words in the language of five- and six-year-olds reported by Rinsland (1945) formed the basic vocabulary. These were analyzed and the list extended to include objects present in the child's school environment (Crowell, 1966). The curriculum includes a great deal of pattern practice of sentence frames that occur with high frequency in standard American English.

It is not expected that the children taught the curriculum will use it as their social language; rather, the objective of the program is to help each child become bi-dialectal, i.e., able to use a standard code in the school situation and his folk language in social situations.

Since it was not possible to introduce a Puerto Rican group to the curriculum until the second year of the project, some of the preliminary findings from other groups were considered in determining the procedure for those classes. While there was little change in the actual content of the program, the material had been broken down into tasks so that sections are presented in appropriate sequence, with constant review built in. These tasks have been combined into programmed lessons for 160 school days. A section on "Conversations" was added to teach greetings, to provide exchange of personal information, and to give practice in free discussion.

Teacher Training

At each center a training session was held for the experimental teachers. If these sessions were held during school hours, substitutes were provided to release the teachers from their classroom responsibilities. During the first year, each group received three days of intensive training provided by a member of the project staff. (See Appendix D.) The first two days the staff member presented the rationale, organization, and content, and provided supervision in the planning of the language lesson. Several training films relating to the content of the program and teaching techniques, and providing examples of eight different teachers working with various parts of the curriculum were used to give an overall view of the program, its development, and its application in actual teaching situations. The third day was spent in the classroom, with the teacher trying out the first lessons and the staff member observing and making further recommendations. All groups were visited two additional times. The visits to the Indian classes of necessity were poorly spaced due to mountain weather conditions, and there was an interval of about four months between the second and third visit. The interval between each of the training visits for the other samples was about two months.

In reviewing the first year's schedule, it was decided that a more effective training sequence could be designed for the remaining Puerto Rican subsample. Instead of three sessions, four were scheduled. The initial two-day session was redesigned to include an overall orientation to objectives, to cover less of the total content, and to provide more specific instruction in the beginning sections of the manual. The second session followed four weeks later to help the teachers cope with problems they might have had in presentation so that these would not

affect and whole year's effort, and to provide additional training to teachers, after they had had the benefit of a few weeks' experience with the content and technique.

In succeeding visits, substitutes assumed the supervision in the classrooms so that prime emphasis could be placed on teachers' observing the evaluating each other while teaching language. After each teacher's lesson, an evaluation checklist (Appendix E) was used as a basis for a thorough discussion, covering the content of the lesson, refinement of techniques, appropriate use of materials, any behavioral problems, and the reinforcement procedure. This observation process resulted in new insights for all of the teachers into the effective presentation of the program and provided a definite boost to teacher morale. While this plan increased the amount of supervision somewhat, it resulted in teachers who not only were more confident in using the program but also followed it more consistently.

Evaluation

Data collection was supervised in each mainland subsample by a coordinator skilled in individual test administration. In some cases these were established professional psychologists; in others, they were highly recommended, advanced graduate students. Training was provided, as needed, to these coordinators to provide a high level of consistency in the administration of the instruments used.

The evaluation battery consisted of the Peabody Picture Vocabulary Test (PPVT) to measure receptive vocabulary and seven subtests of the ITPA. The Test of Expressive Language (TEL) was added to the post-test battery, since it seemed to reflect the effects of the curriculum when used in some of the local projects of the Center. This is an experimental

edition of a brief, easily administered instrument used with permission of the authors. (Crowell, Fargo, & Noyes, 1969) (See Appendix F)

All the children were given the PPVT and ITPA within a few days of the introduction of the language curriculum and were given all three instruments after a five- to six-month interval. The data were forwarded to the investigators, and checking, coding, and keypunching were done in the Center's facilities.

Results and Discussion

The first objective of the field test project was to study the relation of the skill and background of each teacher to the relative success of her use of the curriculum. Each of the experimental teachers was placed into one of two groups in terms of the amount of formal education she had. These groups were those who had completed college, group 1, and those with less training, group 2. Each of the project staff ranked all of the experimental teachers she had trained or visited on the basis of their relative effectiveness in teaching the language curriculum from 1 for the most effective to 17 for the least effective. These rankings were averaged and the resulting means were ranked. The point-biserial correlation coefficient between the level of education and the ranks based on judged effectiveness in use of the specific curriculum is .42. See Table 1.

Since effectiveness in teaching the experimental curriculum rather than the teachers' ability to carry out the remainder of their classroom programs was of primary concern to the investigators, these rankings are listed along with the net change on each subtest of the ITPA and the PPVT for each class. See Table 2. It should be noted, however, that the teachers ranked at 7 and 8 are teacher aides who worked under the close

Table 1

Educational Level and Ranking on Effectiveness in Using Language Curriculum for 17 Experimental Teachers

Educational Level	Effectiveness
1	1
1	2
1	3
1	4
1	5
1	6
2	7
2	8
1	9
1	10
1	11
1	12
1	13
2	14
2	15
1	16
2	17

$r_{pb} = .42$

Table 2

Net Gains from Pre-test to Post-test Standard Scores on ITPA Subtests, Number of Categories Used on Verbal Expression Subtest, and PPVT I.Q. Scores for Experimental Classes Listed in Order of the Teachers' Judged Effectiveness in Using Language Curriculum

Teacher Effectiveness Ranking	Auditory Reception	Visual Reception	Auditory Association	Visual Association	Verbal Expression	Grammatic Closure	Manual Expression	Sum of Gain	Number of Categories	PPVT
1	3.2	3.7	5.4	1.8	10.5	4.0	1.9	30.5	2.1	10.28
2	0.9	3.0	2.8	4.2	6.0	1.1	-0.9	17.1	1.6	13.17
3	3.9	3.0	-1.8	1.9	7.0	0.0	0.8	14.8	2.3	16.33
4	0.05	-0.5	-0.8	2.7	4.7	2.4	2.9	11.45	1.7	14.47
5	2.5	-2.0	12.3	8.8	5.3	1.5	5.0	33.4	2.5	4.25
6	2.9	2.1	2.8	2.6	-3.0	2.3	0.2	9.9	1.1	14.88
7	3.1	4.1	5.0	1.9	8.6	6.0	-1.1	27.6	1.3	8.00
8	4.2	2.2	3.2	2.2	9.7	3.3	0.3	25.1	2.7	3.25
9	4.8	0.0	5.1	5.8	1.0	3.9	-0.1	20.3	0.7	7.18
10	0.6	1.6	-0.2	0.7	1.3	0.1	-0.6	3.5	1.1	-0.82
11	-1.1	1.7	0.1	0.9	2.4	-2.5	-0.7	.8	1.2	8.14
12	3.2	0.9	1.1	1.4	7.1	-0.4	2.4	15.7	2.4	5.35
13	-2.3	-3.4	-0.3	-5.9	2.4	2.0	-3.3	-10.8	1.2	14.83
14	1.8	1.5	1.8	1.3	6.1	-2.4	0.7	10.8	2.6	-5.21
15	-1.1	-1.2	-2.5	0.5	0.6	-4.2	-0.3	-8.2	1.0	15.00
16	1.4	-4.5	2.5	3.2	-1.3	-2.1	-0.1	0.1	0.5	-6.21
17	2.6	0.4	-5.7	1.1	-1.7	-0.3	1.8	-1.8	0.0	15.10

$r_{tet} = .93$

rho $= .72$, $p \leq .01$

supervision of two of the teachers who were among the best trained and who were rated among the most effective in use of the curriculum. In light of this observation, it can be stated that at least some teachers with limited training and experience, given adequate supervision, can use the curriculum with success. The tetrachoric correlation coefficient between the total net gain and the teacher's ranking was .93. Since the effectiveness scores were already ranks, the total amounts of change from pre-test to post-test mean scores for each teacher were converted to ranks. The rank order correlation between these two sets of ranks was .72. For the data in question, the rank order coefficient is probably a better index of the relationship than the tetrachoric. Both correlations are clearly significantly different from zero ($p < .01$).

The second question raised in the project, i.e., whether or not loss of effectiveness occurred with reduced supervision, affected the decision of the investigators to modify the procedures for the Puerto Rican sample. Preliminary review of test results at the end of the first year revealed that gains made by the field test subsamples were not so great as those made in local (Oahu) classes where special language teachers had been involved (Adkins & Herman) but were more comparable to gains found in local projects where regular classroom teachers had used the curriculum (Crowell, Loveless, Kelly, et al.). Qualitative evaluation of training procedures by the project staff members led to a re-sequencing of content to be presented to the experimental teachers and a re-scheduling of the training and supervisory sessions. The test scores from the Puerto Rican sample do reflect (see Table 3) significant improvement on more different measures than any other subsample. These findings, however, are compounded by the fact that the experimental

Table 3

Adjusted Means and F Ratios for ITPA Subtests and PPVT for the Experimental (Exp.) and Comparison (Com.) Groups of Seven Subsamples and Total Sample

	Appala-chian	Hawai-ian	Indi-an	North-ern Urban	South-ern Negro	Mexican-American	Puerto-Rican	TOTAL
Auditory Reception								
Exp.	33.58	31.56	33.77	39.01	29.05	28.48	32.03	32.85
Com.	37.44	30.85	32.19	38.33	34.10	30.89	29.20	33.19
F	5.27	0.289	1.676	0.099	15.431	1.660	8.119**	0.306
Visual Reception								
Exp.	34.14	33.57	34.80	38.48	32.12	36.74	38.05	35.95
Com.	34.63	35.51	33.69	38.12	37.88	38.26	37.02	36.12
F	0.096	1.734	0.334	0.062	13.233	0.547	0.706	1.285
Auditory Association								
Exp.	30.89	31.28	32.21	37.04	24.63	27.99	32.13	31.54
Com.	31.25	30.37	30.21	38.49	30.72	24.60	26.04	30.71
F	0.038	0.729	0.746	0.007	7.489	1.751	17.933***	1.753
Visual Association								
Exp.	33.56	33.24	34.32	38.57	29.52	33.23	34.73	34.08
Com.	29.58	32.39	32.67	39.75	33.93	33.30	34.36	33.89
F	2.608	0.376	1.004	0.535	5.348	0.001	0.067	0.080
Verbal Expression								
Exp.	33.93	36.21	33.42	37.52	32.18	29.36	38.94	35.06
Com.	32.61	32.36	30.04	36.63	35.23	28.73	35.09	33.32
F	1.458	7.646**	6.132**	0.319	4.202	0.071	8.807**	7.422**
Grammatic Closure								
Exp.	30.43	26.43	28.26	37.37	24.31	25.12	30.32	29.12
Com.	31.66	24.43	29.39	38.15	28.73	27.17	26.03	29.11
F	0.366	3.498*	0.699	0.336	10.280	2.567	8.562**	-0.003
Manual Expression								
Exp.	36.09	36.48	38.85	38.94	37.05	37.43	38.90	37.16
Com.	35.96	35.50	39.20	38.11	38.73	39.92	40.21	37.80
F	0.007	0.585	0.052	0.585	0.984	1.207	1.312	0.892
Number of Categories								
Exp.	5.84	4.96	5.33	7.27	4.49	3.72	5.30	5.32
Com.	5.15	4.42	3.74	6.77	4.21	3.80	4.61	4.75
F	2.028	2.014	14.998***	1.142	0.311	0.017	5.474*	10.554***
PPVT								
Exp.	86.17	80.52	90.21	107.73	72.46	64.28	80.99	
Com.	84.78	83.18	87.99	103.27	80.92	67.54	66.30	
F	0.121	0.251	0.512	1.507	3.402*	0.294	10.45**	

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

treatment had also been revised in that the newer edition of the curriculum manual had also been used. All other subsamples used the UHPLC or second edition of the curriculum, while the Puerto Rican subsample used Language for Preschool, third edition, which had been revised on the basis of the previous year's experience both in the field-test project and the local projects conducted by the Center.

The third question regarding the relative effectiveness of the curriculum with the different culture/dialect groups required the most extensive analyses. For each dialect group, consisting of experimental and comparison classes, an analysis of covariance was made for each of the seven subtests of the ITPA and the PPVT. These findings are summarized in Table 3 and presented more extensively in Appendix G.

Several circumstances that are peculiar to educational research efforts, especially those conducted from great distance, should be noted. First, the comparison classes of the southern Negro sample constituted the experimental group of another federally funded, locally-administered, parent-education project. That project reported favorable results in terms of the cognitive growth of the children. It should also be noted that the two teachers who presented the language curriculum to that subsample were rated among the least effective of all experimental teachers in the field test. Both of these facts became known only after the experiment had been completed, so that it was not feasible to substitute other classes to counteract the accidents of sampling. Note that in this situation the effective N's are the numbers of teachers, two experimental and two comparison.

Since the focus of the program is oral language, the subtests dealing with auditory skills and verbal expression are most relevant

and informative. In fact, in more recent studies conducted by the center, the other ITPA subtests have been deleted from the battery. Examining these measures for the Puerto Rican subsample, it becomes apparent that with the revised curriculum and teacher training procedures the auditory skills including Auditory Reception and Auditory Association, verbal expressive skills including Verbal Expression and the number of scoring categories, and Grammatic Closure all showed substantial gains for the experimental language classes.

On the Manual Expression subtest the Appalachian and Hawaiian means for both the experimental and comparison groups were scarcely different from the mean standard score of the referral (norm) group. On all other subsamples, however, the comparison group scored higher than the experimental group suggesting that those children who had been taught the language curriculum had less need to resort to gestures in communicating than the comparison groups.

The Test of Expressive Language was added to the battery after the project was under way and was administered to the Hawaiian, Appalachian, and Southern Negro subsamples as part of the post-test battery.

Table 4

TEL Means, t-Tests, and p's for Three Subsamples

	Appalachian		Hawaiian		Southern Negro	
	N	$\bar{X}$	N	$\bar{X}$	N	$\bar{X}$
Experimental	20	56.60	20	45.05	21	50.90
Comparison	19	46.74	28	30.79	22	44.45
t	2.96		4.77		2.37	
p	.01		.001		.05	

The differences between the experimental and comparison groups are clearly significant in favor of the groups who had the language curriculum in all three subsamples.

The TEL was used in both the pre-test and the post-test battery for the Puerto Rican subsample. See Table 5.

Table 5

TEL Pre-test and Post-test Means and Correlated t-test for Puerto Rican Subsample

	N	Pre	Post	d
Experimental	38	24.53	38.55	14.02
Comparison	19	32.69	44.08	11.39

t = 1.19
NS

The difference between pre- and post-test scores was greater for the experimental group although this difference was not significant when a correlated t-test was applied.

Appendix A

Outline of the UHPLC Manual

BACKGROUND AND OBJECTIVES viii

INCORPORATING THE UHPLC INTO THE PRESCHOOL PROGRAM x

A. Scheduling x

B. Physical Setting x

C. Grouping xi

D. Personnel xii

THE LANGUAGE HOUR xiii

A. Basis for Formation of Groups xiii

B. Content of Class Activities During the Language Hour xiii

THE LANGUAGE LESSON xiv

A. Description of the Manual Format xiv

B. Use of Materials xvii

C. Techniques xviii

D. Lesson Plans xxv

TRANSFER xxxiv

Level I--Green

Introduction of new content

A. LABELS: Singular

1. Positive Statement: This is a ball 1
2. Positive Question: What is this? 7
3. Not Statement: This is not a boy 10
4. Not Question: What is this not? 13

B. VERBS: Singular

1. Present Progressive Statement: This boy is standing 15
2. Present Progressive Question: What is this boy doing? ... 18

C. DESCRIPTIONS: Singular

1a. Opposite Word Statement: This ball is big 20
(big, long, straight, smooth)
1b. Opposite Word Question: Which ball is big? 25
2a. Color Statement: This paper is red 27
(red, blue)
2b. Color Question: What color is this ball? 30
3a. Positional Statement: This book is on the table 32
(on, under, in)
3b. Positional Question: Where is the book? 35

EXTENSIONS

A. Labels 36
B. Verbs 36
C. Descriptions 37

APPLICATIONS 38

Level II--Pink

Introduction of new content

A. LABELS: Identity plural

1. Positive Statement: These are balls 41
2. Positive Question: What are these? 47

B. VERBS: Plural

1. Present Progressive Statement: These boys are standing .. 50
2. Present Progressive Question: What are these men doing? . 52

C. DESCRIPTIONS: Plural

1a. Opposite Word Statement: These circles are big 54
1b. Opposite Word Question: Which circles are big? 57
2a. Color Statement: These things are red 60
2b. Color Question: Are these blocks blue? 63
3a. Positional Statement: These books are under the table .. 66
3b. Positional Question: Are these marbles in the box? 69

EXTENSIONS

A. Labels: more vocabulary, singular and plural 72
B. Verbs: singular and plural 72
C. Descriptions 73

1. Opposite words: wet, clean, soft, heavy, fat 73
2. Colors: yellow 74
3. Positions: in front of 74

APPLICATIONS 75

Level III--White

Introduction of new content

A. LABELS: Categories

1. Positive Statement: This animal is a lion 79
(animals, plants, buildings, vehicles, toys, clothing) . 82
2. Positive Question: What kind of toy is this? 85

B. VERBS

1. Past of "To Be" Statement: This was a ball 87
2. Past of "To Be" Question: What was this? 92
3. Past Progressive Statement: This boy was standing 94
4. Past Progressive Question: What was the boy doing? 97

C. DESCRIPTIONS

1a. Opposite Pair Statement. Big is the opposite of little . 99
(big-little, long-short, straight-crooked,
smooth-rough)
1b. Opposite Pair Question: What is the opposite of big? ...104
2. Positive Statement using "and": This square is big
and white 106

EXTENSIONS

A. Labels: more categories 111
(tools, weapons, furniture, things to read)
B. Verbs: present progressive (add new words) 113

C. Descriptions

1. Opposite words: dark, loud, cold, happy 113
2. Colors: green, orange 115
3. Prepositions: next to 115
4. Guessing 115

APPLICATIONS 117

Level IV--Yellow

Introduction of new content

A. LABELS: Subject Pronouns

1. Positive Statement: It is a ball 121
   (I, you, he, she, it, we, you, they)
2. Positive Question: What is it? 127

B. VERBS: Past Tense

1. Positive Statement: The boy jumped 129
2. Positive Question: What did the boy do? 133

C. DESCRIPTIONS

1. "Same" Statement: This object is the same as this object.135
2. "All" Statement: All the balls--this ball and this ball .139

EXTENSIONS

A. Labels

1. Use of "a" and "an" with nouns 141
2. Categories: parts, food, children and adults, letters and numbers 142

B. Verbs

1. Present and past progressive, including expanded forms ...145
2. Verbs used with pronouns 145

C. Descriptions

1. "And" with reversible elements 145
2. Opposite pairs: wet-dry, clean-dirty, soft-hard heavy-light, fat-thin 146
3. Colors: purple, black, brown, white 146
4. Prepositions: between 147

D. Questions 147

APPLICATIONS 148

Level V--Blue

Introduction of new content

A. LABELS: Materials

1. Positive Statement: This ball is made of rubber 151
2. Positive Question: What is this ball made of? 155

B. VERBS

1. Infinitive Statement: I want to eat 157
2. Infinitive Question: What do you want to eat? 159
3. Future Statement: The bears are going to walk in the woods 160
4. Future Question: Where are you going to play? 163

C. DESCRIPTIONS

1a. Superlative Statement: This square is the biggest 164
1b. Superlative Question: Which square is the biggest? 168
2a. Comparative Statement: This square is bigger than this square 170
2b. Comparative Question: Which square is bigger than this square? 174

EXTENSIONS

A. Labels 176

1. Other plurals 176
2. Object pronouns 176

B. Verbs 178

C. Descriptions 178

1. Opposite pairs: dark-light, cold-hot, loud-soft, tall-short, happy-sad 178
2. "Or" 179
3. Colors: pink, gray, silver, gold 180
4. Prepositions 181
5. Same and different 181

D. Questions 182

APPLICATIONS 183

Level VI--Gold

Introduction of new content

A. LABELS: Workers

1. Positive Statement: If he is a builder, he builds 187
2. Positive Question: What does a worker do? 191

B. VERBS

1. Simple Present Statement: This box feels heavy 193
2. Simple Present Question: How does this boy look? 197

C. DESCRIPTIONS: Changes

1. Positive Statement: This line changed from short to long.....198
2. Problems 202

EXTENSIONS

A. Labels

1. Categories: fruits, vegetables, money 204
2. Possessive pronouns and adjectives 204

B. Verbs

1. Past tense of sense verbs 206
2. Third person of infinitive forms 206
3. Verb-pronoun combinations 206
4. Discrimination of tenses 206

C. Descriptions

1. Other adjectives 207
2. Irregular comparatives and superlatives 207
3. Colors: dark and light 208
4. Same and different as opposites 208
Same-different chart 209
5. Seriation 210

D. Questions 210

E. Deductions 211

F. Miscellaneous 214

1. Past participles 214
2. Contractions 215
3. Rhyming 216
4. Beginning sounds 216

APPLICATIONS 217

Appendix B

Reinforcement Procedure Used With the Preschool Language Curricula

A reinforcement procedure was used during the presentation of the curriculum in all experimental classes in the field test. This procedure began with the use of edibles and led to a token system with a wide choice of rewards, ranging in value from a balloon to a book. The following is a list of the specific objects earned by the children:

Reinforcer	Number of Marks Needed
candy	4 for 4 M & Ms
flashcards	4 for 1 card
balloons	4
creepy crawlers	4 for small; 8 for large
cereal	4 for several pieces
raisins	8 for a box
regular pencil	8
small writing tablet	8
large pencil	12
crayon	12 for 1 crayon
writing tablet	16
eraser (fancy)	16
toy cars	20
jump ropes	24
play dough	32
coloring book	32
scissors	48
books	48

The reinforcement schedule was applied in accordance with the following instructions to the language teachers.

1. First dispense edible rewards (e.g., M & Ms) directly to a child immediately after he displays a desirable response. Dispense six to 10 M & Ms per child during a lesson at first. Gradually reduce the number of rewards per lesson at a rate that allows the established language lesson behavior to be maintained. Eventually establish four to five M & Ms per child as the limit in any lesson. Praise other responses that deserve reward.

2. When the children become familiar with the reward procedure and the lesson format (in three to six weeks), introduce the delay system. Display two rewards (e.g., candy and balloons) on a pegboard. Prepare "mark cards" for candy and for balloons. Tell the children that they can work for candy or a balloon and ask each child which he prefers. As each child makes his choice, put his name on an appropriate mark card and clip it to the pegboard. During the lesson, when a child displays a desirable response, put a mark on his card and explain that you are putting a mark on it because he gave the right answer, or for whatever the reason. Explain that when he gets all the boxes filled with marks he will receive his balloon or candy. Always pair marks with praise.
3. Gradually introduce more rewards from which the children can choose. Introduce rewards worth fewer marks earlier in the year and ones worth more marks later in the year, so that the delay between the performance and the reward is increased gradually. Continue to offer four- and eight-mark items, however, for children who prefer edibles or do not want to wait. Arrange rewards from left to right on the choice board, according to value, so that the children can easily see the progression from four-mark items to 48-mark items.
4. Limit the number of marks dispensed to a child in a lesson to four or five. Continue to praise other responses that deserve reward.
5. When a child completes a mark card, tell him that he is finished and will get his reward at the end of the lesson, and ask him to make his next selection. Collect all rewards in a reward box until it is time for the children to take them home, if distribution interferes with other parts of the program, but do not fail to deliver them at the appointed time.

6. Vary the procedure according to what works best with each class. For example, use immediate material rewards at the beginning of the year to get the children involved, then gradually eliminate them and rely on praise, or use them at the beginning of the year and at periodic intervals when the children seem to be losing interest or when introducing something that is particularly difficult.

Appendix C

Sample Lesson Plan

(Time: approximately 20 minutes)

The detailed lesson that follows is an example of what can be expected some time after the midpoint of the school year. Teachers plan lessons to include a variety of topics and tasks, but alter the suggested tasks according to the materials that are available to them and the abilities of the children in their class.

TASK 1

Categories--Workers

COMBINATION INTRODUCTORY TASK

Procedure	Lesson
Preparation	
Present several workers, identifying each as a worker. Then identify the group as workers. Show a series of pictures that depict groups of workers. Practice the plural statement in unison with each picture.	(Baker) T: This is a worker. Say it. C: This is a worker. (Plumber) T: This is a worker. Say it. C: This is a worker. (Policeman) T and C: This is a worker. (Baker, plumber, and policeman) T: These are workers. Say it. C: These are workers. T: Again.... (Fireman, doctor, and painter) T: These are workers. Say it. C: These are workers....
Present pictures of non-workers, and practice the plural not statement in unison with each.	(Children playing) T: These are not workers. Say it. C: These are not workers. (Animals) T: These are not workers. C: These are not workers. (Buildings) T and C: These are not workers....
STATEMENT REPETITION	
Show pictures of single workers and practice the category statement for each in unison, calling for occasional individual responses.	(Baker) T: This worker is a baker. Say it. C: This worker is a baker. T: Again.... (Plumber) T: This worker is a plumber. C: This worker is a plumber....

(continued on next page)

Combination Introductory Task (cont.)

SHOW ME

Display flannelboard pictures of workers and other categories on the flannelboard. Ask individual children to find a picture that belongs to a given category and tell about it. Call for occasional unison repetitions.

Include some of the following words:

Workers		Non-workers
*Baker	Dentist	Children playing
*Plumber	Teacher	
*Policeman	Truck driver	Group of animals
*Fireman	Bricklayer	
*Doctor	Carpenter	Group of buildings
*Painter	Farmer	
*Fisherman		Fish in a bowl
*Animals	Plants	Group of toys
*Furniture	Vehicles	Basket of fruit
*Toys	Clothes	
*Food	Buildings	

(Flannelboard workers, furniture, food, animals, plants, buildings, vehicles, toys, and clothes)

T: Jackie, show me a worker and tell me what kind of worker he is.

C: (taking a fireman from the flannelboard) This worker is a fireman.

T: Fine. Let's all say it....

T: Sally, you show us an animal and tell us about it.

C: (taking a lion from the flannelboard) This lion is an animal.

T: Right, and we can also say, "This animal is a lion."...

TASK 2

Names--Singular and Plural

SINGULAR--PLURAL CHANT: Body parts

As you point to a part (or parts) of your body, direct the children to imitate you and to make singular, then plural statements, as appropriate, in a chant, so that the task moves at a fast pace.

*knee(s)	heel(s)	finger(s)
*elbow(s)	cheek(s)	hand(s)
*arm(s)	wrist(s)	toe(s)
	shoulder(s)	

T: Let's talk about different parts of our bodies. When I point to just one part, say, "This is," and when I point to more than one part, say, "These are." Let's go.

(Knee)

T and C: (pointing) This is a knee. This is a knee.

(Knees)

T: These are knees....

(continued on next page)

Singular--Plural Chant: Body Parts (cont.)

Review parts of the body with which children are familiar and introduce new ones.

(Elbow)
T and C: (pointing) This is an elbow. This is an elbow.
(Elbows)
T: These are elbows....

TASK 3

Comprehensive (Labels, Verbs, and Colors-- Singular, Positive, and Not)

ANALOGY TASK: My turn--Your turn

Arrange many picture cards in pairs, some to illustrate color, some present progressive or past tense statements, some statements with opposite words, and some naming statements. If you make a color statement about the first picture in a pair, then the children should make a color statement about the second picture and so forth.

If the children make statements that are not analogous, correct them and give them examples of what you mean by "the same kind of sentence."

```
**************************************
* Colors --red, blue, yellow         *
* Verbs --present progressive, past  *
* Labels --names                     *
* Opposite words --big, clean,       *
*                  straight, cold    *
**************************************
```

It is helpful to say the beginning of the statement for the children until they catch on. Gradually eliminate the clues, so that instead of completing the analogous statement, they produce the complete statement themselves.

(Picture cards arranged in pairs)
T: I'm going to show you a picture and tell you something about it. Then I'll show you another picture and I want you to tell me about it.
(Picture of red kite flying)
I might show you this card and say, "The kite is flying." Then I might show you a card like this.
(Picture of blue boat sailing)
Since I told you what the kite is doing, you tell me what the boat is doing. Tell me.
C: The boat is sailing.
C: The boat is floating.
T: That's right. Now if I had said, "The kite is red," I'd want you to tell me the color of the boat when I show it to you. Let's try it.

(Picture of red kite flying)
T: The kite is red.
(Boat)
T: The boat _____
C: is blue.
(Kite)
T: Now what if I said, "This is a kite"?
(Boat)
T: What would you say?
C: This is a boat.
T: Right.

(continued on next page)

Analogy Task (cont.)

(Boy swimming)
T: The boy is swimming.
(Bird flying)
C: The bird is flying.

(Blue flower)
T: This is a flower.
(Red box)
C: This is a box.

(Blue umbrella)
T: The umbrella is blue.
(Red fish swimming)
C: The fish is red.

(Watermelon)
T: I ate the watermelon.
(Glass of water)
C: I drank the water.

(Elephant)
T: The elephant is big.
(Mouse)
C: The mouse is little.

TASK 4

Names, Color, Size

SAME--DIFFERENT

Using picture flashcards of various objects, some identical and some not identical, hold up two at a time, letting the children tell you if the objects they see are the same or different.

T: When I hold up two pictures, tell me if the objects you see have the "same" name or "different" names.
(Holding two pictures of balls)
T: If I show you these pictures, you say "same" because they are both balls.

T: (holding two cats)
C: Same.
T: Why did you say, "Same"?
C: Because this is a cat and this is a cat. (pointing)
T: Yes, they are both cats. How about these?

(continued on next page)

Same--Different (cont.)	(Holding a cat and a dog) C: Different. T: Why did you say, "Different"? C: Because one is a cat and one is a dog. T: Very good, children. Now let's try these. (Holding a house and a car) C: Different. (Holding two tables) C: Same....
Vary the task by including <u>color</u>.	T: Now when I hold up two cards, tell me if the <u>colors</u> are the same or different. (Holding up two red cards) T: You would say, "Same," because they are both red. (Holding two blue cards) C: Same. T: Why did you say, "Same"? C: Because they are both blue. T: Good answer. Let's try some more. (Two purple cards) C: Same. (Yellow card and purple card) C: Different.
Include both unison and individual responses.	T: (two green cards) Mary, tell us about these. C: Same. T: Very good, Mary....
"Size" of objects adapts well to this task also, but be sure the children understand which characteristic is being discriminated.	T: Let's talk about "size" now. I have some balls and when I show you two of them, tell me if the sizes are the same or different. (Holding a big ball and a little ball) C: Different. T: You are right. This ball is big and this one is little, so they are different sizes. Tell me about these. (Two balls the same size) C: Same. T: Very good. They are the same size. (Two the same size) C: Same. (Two of different sizes) C: Different. T: John's turn.

(continued on next page)

Same--Different (cont.)

(Two the same size)
C: Same....

Summarize after concluding each characteristic.

T: You did good work, children. You told me if they were the same "size" or different "sizes."

TASK 5

Comprehensive--Names, Verbs, and Colors

TELL ME ALL

Use a picture for this task--one that includes a number of figures, colors, and actions.

```
**********************
*       Names        *
*       Verbs        *
*      Colors        *
* Opposite Words     *
*  Prepositions      *
**********************
```

After a number of statements have been made, you might need to give further clues.

When the sentences are given, then feed them back to the children by way of summary. If you can remember who made each statement, mention his name as you define what he did.

T: I want you to tell me everything you can about this picture.
C: (pointing) This boy is sliding.
T: Good, Charles. You told us what the boy is doing. Who can tell us something else?
C: The wagon is red.
T: That's very good, Ruthie. You told us about a color.
C: This is a house.
T: Good, Fred. You told us the name of something.

T: Can anyone else tell us about a color? Yes, Fred.
C: The car is blue.
T: Good. Is anyone else doing something?
C: The daddy is sitting down....

T: Let's see now. You told me the names of the house and the tree. You said, "This is a house" and "This is a tree." You told me about the color of the wagon and the car. Charlie said, "This wagon is red," and Fred said, "The car is red." You told me about what some people are doing. You said, "The boy is sliding" and "The daddy is sitting down." Good work.

Appendix D

Teacher Training Syllabus, 1968-69

Pre-service training session

1. The program and the manual
   Distribute manuals
   Read and discuss "Background and Objectives"
2. Scheduling
   Read "Scheduling"
   Plan classroom schedules to include the UHPLC
3. The language corner
   Read "Physical Setting"
   Plan language corners
4. Rotation
   Read "Grouping" and "Personnel"
   Demonstrate with chart and discuss rotation
   Plan settings and supervisors for all groups
5. Grouping
   Read "Basis for Formation of Groups"
   Teachers make group assignments
6. Language strengthening and supplementary school skill activities
   Read "Content of Class Activities During the Language Hour"
   Distribute activity packets and discuss their use
   Review rotation
7. UHPLC Sentence Patterns
   Read "Table of Contents"
   Discuss uses
8. Transfer
   Read "Transfer"
   Offer specific examples
9. UHPLC content
   Read "The Language Lesson"
   Read green level
   Practice regular procedure
   Discuss materials
   Film #1--UHPLC Content (first half). Discuss
   Film #1 (second half). Discuss
10. Reinforcers
   Read "Reinforcement Procedure." Discuss
   Distribute reinforcement supplies
   Role-play reinforcement procedure
11. Techniques
   Read "Techniques." Discuss
   Distribute observation forms
   Film #2--UHPLC Techniques--note observations. Discuss
   Role-play techniques
12. Lesson plans
   Read "Lesson Plans." Discuss
   Demonstrate
   Practice
   Role-play and tape
13. Sequence
   Read "Description of manual format" Discuss

Emphasize review
Make lesson plans to illustrate sequence

14. Application
Film #3, UHPLC--Observation. Discuss each lesson
Summarize

In-service training sessions (usually two days)

1. Trainer observes and tape-records language lessons. Teachers and trainer discuss lessons.
2. Teachers observe each other when possible.
3. Teachers evaluate taped lessons on lesson evaluation forms and compare with lesson plans.
4. Teachers discuss particular problems that they have had in implementing the UHPLC.
5. Teachers practice making lessons plans, discuss pace with which they are covering and reviewing content, and read and discuss topics which they will be covering next.
6. Trainer gives special attention to deficiencies noted and provides assistance in correcting them. Demonstration by the trainer, review of appropriate manual sections, practice, and role-play are employed as corrective devices. (The second contact in most cases would center around lesson-planning and reinforcement procedures; the third, around techniques.)

Appendix E

LANGUAGE FOR PRESCHOOL

Language Lesson Evaluation

I. Content

A. Does this lesson contain tasks from several different sections? (Conversations, Labels, Colors, etc.)

B. Is there something new introduced in nearly every lesson?

II. Tasks

A. Is there a variety of tasks presented? (Statement repetition, Varied questions, Show me, Sentence or word drills, Tell me all, Ask me, etc.)

B. Does the teacher give clear directions before each task, illustrating if necessary?

C. What purpose is accomplished by each task? (introduction, practice, expansion, application, testing, etc.)

III. Materials

A. Does the teacher use a variety of media? (objects, chalkboard, pictures, flashcards, flannelgraph, etc.)

B. Does the teacher use more than one example to teach a concept? Is the example clear and uncluttered?

C. Are new examples brought in for review?

IV. Techniques

Is there a variety of techniques used--some with individuals and some with the whole group. (change of pace, voices loud and soft or high and low, clapping in rhythm or for one word, physical activity)

V. Comprehension

Does the child understand the sentence pattern he is using?

a. Does the teacher ask why? or how do you know?
b. Can the child correct himself?
c. Is any task too hard for some children? What does the teacher do? How does she correct an error?

VII. Management and group involvement

A. How would you rate the participation of the group?

B. If one or more children are not "tuned in," what does the teacher do?

C. If a child is disruptive, what does the teacher do? Does she

draw child in,
exclude child, or
ignore behavior?

VIII. Reinforcement procedures

A. Are the reward cards visible to the children?

B. Does the teacher remind each child of what he is working on?

C. Does the teacher use a different colored pencil or crayon each day so she knows how many marks she is giving?

D. When does the teacher reinforce?

1. After a unison task, reinforces group---------- R-G
2. After an individual response, reinforces individual---- R-I
3. After an individual was outstanding in a group task, reinforces individual in group---------- RIG

E. Does the teacher tell the child why he is getting a mark? (Put circle around.) (R-G) (R-I) (RIG)

F. Does the teacher accompany each mark with some form of verbal praise?

G. When does the teacher give out rewards?

TEST TIME_____

EXHIBIT VI

TEST OF EXPRESSIVE LANGUAGE

Experimental Edition (February, 1969)

Doris C. Crowell, George A. Fargo, & Mary H. Noyes, University of Hawaii

Child ID#_____

Name:_____ Sex: M F

School:_____

Examiner:_____ ID#_____

Teacher:_____ Class Type_____

	Yr	Mo	Day
Date			
Birthdate			
CA			

Score_____

DEMONSTRATION ITEM:

What's this? (Examiner points to own nose).____

No response: NR
Incorrect: 0
Correct: 1

WHAT'S THIS? (Point)

___ 1. hair_____

___ 2. eyebrows_____

___ 3. tongue_____

___ 4. neck_____

___ 5. stomach_____

___ 6. knee_____

___ 7. elbow_____

WHAT AM I DOING? (Demonstrate)

___ 8. writing_____

___ 9. reading (aloud)_____

___ 10. counting (1-2-3-4-5)_____

___ 11. listening (Cup hand at ear)____

___ 12. spelling (s-p-e-l-l-i-n-g)_____

___ 13. erasing (Use pencil eraser)____

WHAT'S THIS? (Show object)

___ 14. ruler_____

___ 15. eraser_____

___ 16. pencil sharpener_____

___ 17. chalk_____

___ 18. star_____

___ 19. square_____

___ 20. triangle_____

___ 21. diamond_____

___ 22. half circle_____

WHAT DO YOU DO WITH YOUR _____?
(Don't point; verbal cue only)

___ 23. eyes_____

___ 24. ears_____

___ 25. nose_____

Test of Expressive Language (p. 2)

___ 26. teeth_____

___ 27. feet_____

___ 28. brain_____

___ 29. lungs_____

WHAT'S THIS? (Show object)

___ 30. penny_____

___ 31. nickel_____

___ 32. quarter_____

___ 33. dollar_____

___ 34. check_____

___ 35. napkin_____

___ 36. ashtray_____

___ 37. comb_____

___ 38. fork_____

___ 39. razor_____

WHAT DO YOU _____ WITH? (Verbal cue only)

___ 40. write_____

___ 41. cut paper_____

___ 42. measure_____

___ 43. take off pencil marks_____

___ 44. write on the board with_____

WHAT'S THIS MADE OF? (Show sample)

___ 45. wood_____

___ 46. paper_____

___ 47. metal_____

___ 48. plastic_____

___ 49. glass_____

THIS ONE IS BIG AND THIS ONE IS (what)?
(Show cards)

___ 50. big-little _____

___ 51. up-down _____

___ 52. black-white _____

___ 53. smooth-rough _____

___ 54. left-right _____

___ 55. few-many _____

___ 56. over-under _____

WHAT DO YOU DO WITH A _____?
(Verbal cue only)

___ 57. pencil_____

___ 58. ruler_____

___ 59. scissors_____

___ 60. eraser_____

___ 61. sharpener_____

___ 62. chalk_____

___ 63. phonograph_____

WHAT DO YOU USE TO ____?

____64. buy bubble gum_____

____65. sweep the floor_____

____66. open a lock_____

____67. clean your teeth_____

____68. fix a cut_____

____69. shave_____

SAY:

____70. a man is big; a baby is . . . . what?_____

____71. charcoal is black; rice is . . . . . what?_____

____72. sky is up; ground is . . . . what?_____

____73. soup is hot; ice is . . . . what?_____

____74. day is light; night is . . . . what?_____

____75. coloring is easy; writing is . . . . what?_____

Appendix G

Analysis of Covariance for ITPA & PPVT Data for Experimental and Comparison Groups

Appalachian Subsample

Measure	Source	Sum of Squares	df	Mean Square	F
ITPA					
Auditory Reception	Between	170.09	1	31.71	5.27*
	Within	1769.11	43		
	Total	1939.20			
Visual Reception	Between	5.25	1	27.32	0.10
	Within	1435.32	43		
	Total	1440.58			
Auditory Association	Between	112.29	1	36.84	0.04
	Within	3244.52	43		
	Total	3356.81			
Visual Association	Between	144.59	1	66.27	2.61
	Within	2985.29	42		
	Total	3129.88			
Verbal Expression	Between	25.73	1	12.71	1.46
	Within	946.45	41		
	Total	972.18			
Grammatic Closure	Between	131.27	1	44.52	0.37
	Within	3352.64	42		
	Total	3483.91			
Manual Expression	Between	2.75	1	27.44	0.01
	Within	1242.23	42		
	Total	1244.98			
Number of Categories	Between	12.84	1	2.29	2.03
	Within	109.91	41		
	Total	122.75			
PPVT	Between	0.18	1	199.31	0.12
	Within	18110.25	47		
	Total	18110.43			

* $p \leq .05$

Analysis of Covariance for ITPA & PPVT Data for Experimental and Comparison Groups

Hawaiian Subsample

Measure	Source	Sum of Squares	df	Mean Square	F
ITPA					
Auditory Reception	Between	20.44	1	31.76	0.29
	Within	2474.94	71		
	Total	2495.38			
Visual Reception	Between	93.13	1	38.90	1.73
	Within	3046.56	70		
	Total	3139.69			
Auditory Association	Between	118.94	1	24.67	0.73
	Within	3778.44	70		
	Total	3897.38			
Visual Association	Between	0.50	1	33.66	0.38
	Within	3415.37	70		
	Total	3415.87			
Verbal Expression	Between	237.69	1	35.19	7.65**
	Within	2668.25	71		
	Total	2905.94			
Grammatic Closure	Between	193.84	1	19.22	3.50*
	Within	2023.93	68		
	Total	2217.77			
Manual Expression	Between	44.88	1	25.58	0.59
	Within	1809.81	65		
	Total	1854.69			
Number of Categories	Between	4.69	1	2.55	2.01
	Within	196.97	70		
	Total	201.66			
PPVT	Between	2056.69	1	331.12	0.25
	Within	24423.06	56		
	Total	26479.75			

* $p \leq .05$
** $p \leq .01$

Analysis of Covariance for ITPA & PPVT Data for Experimental and Comparison Groups

Indian Subsample

Measure	Source	Sum of Squares	df	Mean Square	F
ITPA					
Auditory Reception	Between	16.68	1	17.27	1.68
	Within	865.32	45		
	Total	882.00			
Visual Reception	Between	44.54	1	35.69	0.33
	Within	1606.40	45		
	Total	1650.94			
Auditory Association	Between	15.25	1	26.41	1.76
	Within	2315.18	45		
	Total	2330.43			
Visual Association	Between	75.33	1	30.82	1.00
	Within	1734.41	45		
	Total	1309.74			
Verbal Expression	Between	133.63	1	17.97	6.13*
	Within	908.79	45		
	Total	1042.42			
Grammatic Closure	Between	9.56	1	20.60	0.70
	Within	2019.72	45		
	Total	2029.28			
Manual Expression	Between	13.25	1	22.62	0.05
	Within	1103.75	45		
	Total	1117.00			
Number of Categories	Between	26.75	1	1.96	14.99**
	Within	98.87	45		
	Total	125.62			
PPVT	Between	57.44	1	113.06	0.51
	Within	6364.00	45		
	Total	6421.44			

* $p \leq .05$
** $p \leq .001$

Analysis of Covariance for ITPA & PPVT Data for Experimental and Comparison Groups

Mexican-American Subsample

Measure	Source	Sum of Squares	df	Mean Square	F
ITPA					
Auditory Reception	Between	54.39	1	28.99	1.66
	Within	914.55	32		
	Total	968.94			
Visual Reception	Between	11.51	1	35.37	0.55
	Within	1236.73	32		
	Total	1248.24			
Auditory Association	Between	57.20	1	55.82	1.73
	Within	2560.69	33		
	Total	2617.89			
Visual Association	Between	43.93	1	28.04	.001
	Within	1166.62	31		
	Total	1210.55			
Verbal Expression	Between	4.19	1	46.78	0.071
	Within	2035.80	33		
	Total	2039.99			
Grammatic Closure	Between	34.36	1	13.78	2.57
	Within	1086.26	32		
	Total	1120.62			
Manual Expression	Between	40.18	1	42.81	1.21
	Within	1756.76	32		
	Total	1796.94			
Number of Categories	Between	0.03	1	3.62	0.02
	Within	134.09	32		
	Total	134.12			
PPVT	Between	1124.25	1	284.18	0.29
	Within	21625.69	31		
	Total	22749.94			

Analysis of Covariance for ITPA & PPVT Data for Experimental and Comparison Groups

Northern Urban Subsample

Measure	Source	Sum of Squares	df	Mean Square	F
ITPA					
Auditory Reception	Between	2.63	1	59.21	0.10
	Within	3363.12	53		
	Total	3365.75			
Visual Reception	Between	0.25	1	26.72	0.06
	Within	1525.50	53		
	Total	1525.75			
Auditory Association	Between	221.37	1	37.43	0.75
	Within	4401.56	53		
	Total	4622.93			
Visual Association	Between	13.62	1	36.06	0.54
	Within	2098.50	53		
	Total	2112.12			
Verbal Expression	Between	37.25	1	33.69	0.32
	Within	2244.12	54		
	Total	2281.37			
Grammatic Closure	Between	92.87	1	25.01	0.34
	Within	4422.12	54		
	Total	4514.99			
Manual Expression	Between	5.06	1	16.47	0.59
	Within	1320.81	54		
	Total	1325.87			
Number of Categories	Between	3.45	1	3.03	1.14
	Within	174.48	54		
	Total	177.93			
PPVT	Between	92.25	1	166.26	1.51
	Within	15412.50	54		
	Total	15504.75			

Analysis of Covariance for ITPA & PPVT Data for Experimental and Comparison Groups

Puerto Rican Subsample

Measure	Source	Sum of Squares	df	Mean Square	F
ITPA					
Auditory Reception	Between	24.31	1	14.63	8.12**
	Within	3176.31	68		
	Total	3200.62			
Visual Reception	Between	122.75	1	22.51	0.71
	Within	3387.12	68		
	Total	3509.87			
Auditory Association	Between	244.35	1	30.82	17.93***
	Within	7027.44	68		
	Total	7271.79			
Visual Association	Between	4.81	1	29.50	0.07
	Within	3695.81	68		
	Total	3700.62			
Verbal Expression	Between	32.19	1	24.50	8.81**
	Within	4153.69	68		
	Total	4185.88			
Grammatic Closure	Between	181.81	1	32.29	8.56**
	Within	5116.13	68		
	Total	5297.94			
Manual Expression	Between	11.31	1	19.58	1.31
	Within	2947.81	68		
	Total	2959.12			
Number of Categories	Between	5.23	1	1.31	5.47*
	Within	172.25	68		
	Total	177.48			
PPVT	Between	65.56	1	228.53	10.45***
	Within	30556.00	59		
	Total	30621.56			

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

Analysis of Covariance for ITPA & PPVT Data for Experimental and Comparison Groups

Southern Negro Subsample

Measure	Source	Sum of Squares	df	Mean Square	F
ITPA					
Auditory Reception	Between	174.68	1	15.33	15.43***
	Within	679.06	37		
	Total	853.74			
Visual Reception	Between	306.95	1	23.75	13.23***
	Within	1015.05	36		
	Total	1322.00			
Auditory Association	Between	308.02	1	49.23	7.49**
	Within	2554.75	38		
	Total	2862.77			
Visual Association	Between	150.81	1	35.07	5.35*
	Within	1449.86	37		
	Total	1600.67			
Verbal Expression	Between	46.71	1	21.05	4.20*
	Within	1013.96	37		
	Total	1060.67			
Grammatic Closure	Between	150.00	1	18.32	10.28**
	Within	889.69	37		
	Total	1039.69			
Manual Expression	Between	34.88	1	27.82	0.98
	Within	1165.48	37		
	Total	1200.36			
Number of Categories	Between	1.60	1	2.35	0.31
	Within	91.50	38		
	Total	93.10			
PPVT	Between	729.12	1	221.06	3.40
	Within	13183.88	40		
	Total	13913.00			

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

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